

### **REMARKS**

The title of the application has been changed, as recommended by the Examiner. The amendments to the specification correct inadvertent typographical errors.

Claims 44-47 have been cancelled. Claims 48-51 and 53 have been amended. The amendment to the claims is supported by the Specification, at least at page 7, lines 25-29.

New claims 54-61 have been added. New claims 54, 55 and 57 are supported by the Specification, at least at page 17, lines 5-8, and Figure 3C. New claim 56 is supported by the Specification, at least at page 7, lines 28-29. New claim 58 is supported by the Specification, at least at page 17, lines 24-25. New claims 59-61 are supported by cancelled claims 45-47 and by the specification, at least at page 14, lines 24-29.

No new matter has been added. Claims 48-61 are present in the application.

### **INTERVIEW SUMMARY**

Applicants would like to thank Examiner Fletcher for the helpful discussion with Applicants' representative on October 31, 2006. During this discussion, the present amendment to claim 48 was reviewed. The claim terms "near" and "ink pattern" were also discussed.

### **REQUEST FOR RECONSIDERATION**

Scanning probe microscopy (SPM) instruments can be used for a wide variety of applications, including measurement of surface properties, biological sensors, and nanolithography. SPM instruments use a probe having a cantilever beam with a tip attached at the distal end of the beam. Typically, the materials present in the tip and cantilever of an SPM probe have been limited to silicon or silicon nitride, due to the limitations of conventional probe fabrication processes.

The present invention includes a method for contact printing that includes patterning an ink on a surface of a scanning probe microscopy probe to form an

ink pattern on the surface. The method further includes positioning the surface near a substrate, where the ink pattern is transferred from the surface to the substrate.

### **Rejection under 35 U.S.C. § 112**

The rejection the claims as indefinite under 35 U.S.C. § 112, 2<sup>nd</sup> paragraph has been obviated by appropriate amendment. The claims have been amended to delete the word “flat” from the claims. With respect to the term “near” in the claims, Applicants respectfully note that this term means any distance between the substrate and the surface of the probe that allows transfer of ink from the probe to the substrate. Applicants respectfully request that this rejection be withdrawn.

### **Rejection over Hong**

The rejections of claims 44-47 as anticipated under 35 U.S.C. § 102(b) by, or as obvious under 35 U.S.C. § 103(a) over, Hong *et al.*, *Science*, 286 (1999) 523-525 (Hong) have been obviated by appropriate amendment. Claims 44-47 have been cancelled.

### **Rejection over Hong and Andreoli**

The rejection of claims 48-53 as obvious under 35 U.S.C. § 103(a) over Hong in view of PCT Application Publication No. WO 99/56176 A1 to Andreoli *et al.* (Andreoli) is respectfully traversed. The references do not disclose or suggest forming an ink pattern on a surface of a scanning probe microscopy probe, nor do the references disclose or suggest the transfer of the ink pattern from the surface to a substrate. In contrast, independent claim 48 includes patterning an ink on a surface of a scanning probe microscopy probe to form an ink pattern on the surface, and positioning the surface near a substrate, where the ink pattern is transferred from the surface to the substrate.

Hong discloses the use of dip pen nanolithography (DPN) to form multicomponent nanostructures (p.523, middle column, last sentence). Ink is

applied to a DPN probe by contacting the probe with a solution or with a vapor of the ink (p.523, right column, last sentence through p.524, left column, first sentence). The ink is reported as coating the probe tip uniformly, which allows control of the printing process so as to provide high-quality images (p.524, left column, 4<sup>th</sup>-5<sup>th</sup> sentences). The uniformly inked probe then can be moved along a substrate to form a line (p.524, left column, 6<sup>th</sup> sentence) or can be contacted at one point on the substrate to form a dot (p.524, middle column, 2<sup>nd</sup> sentence of full paragraph). There is no disclosure of forming a non-uniform pattern of ink on the probe.

Andreoli discloses a method of forming an atomic force microscopy (AFM) probe having a cantilever and a tip (p.1, lines 3-9; p.3, lines 2-3). The method includes etching a tip-like indent in a substrate, covering the substrate and indent with a photoresist, and patterning the photoresist to form a cantilever connected to a tip, where the tip has the shape of the indent (p.3, lines 3-7). The probe tip may be used to investigate, structure or modify a surface, or it may be used to interact with a storage medium (p.6, lines 25-27). There is no disclosure of forming a pattern of ink on the probe tip, or of using the probe to form an ink pattern on a substrate.

Independent claim 48 recites a contact printing method that includes patterning an ink on a surface of a scanning probe microscopy probe to form an ink pattern on the surface, and positioning the surface near a substrate, where the ink pattern is transferred from the surface to the substrate. This method is described in the specification, for example at page 17, lines 4-14 and in FIGS. 3C and 8. Ink patterns 92 (FIG. 3C) and 292 (FIG. 8) are represented as non-uniform coatings of ink on the probe surface. The ink pattern that is transferred to the substrate is described as a copy of the pattern that was placed on the probe surface (p.17, lines 10-14). For example, if the probe represented in FIG. 3C is positioned sufficiently near a substrate, the pattern 92 of ink pixels 66 on surface 90 would be copied to form an inverted pattern of the ink pixels on the substrate.

Neither Hong nor Andreoli disclose or suggest forming an ink pattern on a probe. Hong discloses only lithography in which the probe is uniformly inked, and does not disclose a pattern of ink on the probe. Andreoli only mentions lithography applications in passing, and does not disclose forming a pattern of ink on the probe. Applicants submit that the claims are not obvious over the applied references. Withdrawal of the rejection is respectfully requested.

### **Double Patenting**

Applicants respectfully request that the provisional rejection of the present claims under the judicially created doctrine of obviousness-type double patenting over the claims of U.S. Patent Application Serial No. 10/440,022 be held in abeyance until the provisional obviousness-type double patenting rejection is the only rejection remaining [MPEP 804(I)(B)].

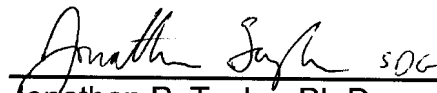
### **CONCLUSION**

All of the grounds raised in the present Office Action for rejecting the application are believed to be overcome or rendered moot based on the remarks above. Thus, it is respectfully submitted that all of the presently presented claims are in form for allowance, and such action is requested. Should the Examiner feel a discussion would expedite the prosecution of this application, the Examiner is kindly invited to contact the undersigned at (312) 876-1400.

Respectfully submitted,

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